

1. A method comprising:

- accepting user input specifying a geometrical arrangement of two or more buttons on one or more displayed pages;
- accepting user input labeling at least two of the two or more buttons on the one or more displayed pages;
- accepting user input defining at least one interaction between the labeled at least two buttons;
- accepting user input specifying at least one constraint cost for the defined at least one interaction; and
- assigning the labels of the at least two buttons among the two or more buttons on one or more displayed pages such that the at least one constraint cost is substantially optimized.

1 3. The method of Claim 1, wherein said accepting user input
2 specifying a geometrical arrangement of two or more buttons on one or
3 more displayed pages further comprises:
4 accepting user input specifying two or more locations of the
5 two or more buttons on the one or more displayed pages.

1 4. The method of Claim 1, wherein said accepting user input
2 labeling at least two of the two or more buttons on the one or more
3 displayed pages further comprises:
4 accepting user input labeling at least two buttons on a first
5 displayed page presented to a user.

1 5. The method of Claim 1, wherein said accepting user input
2 labeling at least two of the two or more buttons on the one or more
3 displayed pages further comprises:
4 accepting user input labeling at least one button on a first
5 displayed page presented to a user; and

6 accepting user input labeling at least one button on a second
7 displayed page presented to the user.

1 6. The method of Claim 1, wherein said accepting user input
2 defining at least one interaction between the labeled at least two
3 buttons further comprises:
4 accepting user input identifying at least one relationship
5 between the labeled at least two buttons, said
6 relationship selected from a relationship group including
7 a Fitts'-movement interaction, a Euclidean-distance
8 interaction, a City-Block-distance interaction, an X-
9 directed interaction, and a Y-directed interaction.

1 7. The method of Claim 1, wherein said accepting user input
2 specifying at least one constraint cost for the defined at least one
3 interaction further comprises:
4 accepting user input specifying at least one constraint cost
5 for the defined at least one interaction, said at least
6 one constraint cost selected from a constraint-cost group
7 including a global-difficulty cost, a pages-to-close-
8 buttons cost, a pages-to-fixed buttons cost, a path-
9 difficulty cost, a pages-to-far buttons cost, and a
10 parent-to-child variability cost.

1 8. The method of Claim 1, wherein said accepting user input
2 specifying at least one constraint cost for the defined at least one
3 interaction further comprises:
4 accepting user input specifying at least one weighting factor
5 to be associated with the specified at least one
6 constraint cost.

1 9. The method of Claim 1, wherein said assigning the labels
2 of the labeled at least two buttons among the two or more buttons on
3 one or more displayed pages such that the at least one constraint
4 cost is substantially optimized further comprises:
5 assigning at least one label of the labeled at least two
6 buttons among the two or more buttons on the one or more
7 displayed pages on the basis of an optimization procedure
8 selected from an optimization-procedure group including

a gradient descent substantial optimization procedure and
a simulated annealing substantial optimization procedure.

10. A system comprising:

circuitry for accepting user input specifying a geometrical
arrangement of two or more buttons on one or more
displayed pages, said circuitry selected from an
electrical-circuitry group including electrical circuitry
having at least one discrete electrical circuit,
electrical circuitry having at least one integrated
circuit, electrical circuitry having at least one
application specific integrated circuit, electrical
circuitry forming a general purpose computing device
configured by a computer program, electrical circuitry
forming a memory device, and electrical circuitry forming
a communications device;

circuitry for accepting user input labeling at least two of the
two or more buttons on the one or more displayed pages,
said circuitry selected from an electrical-circuitry
group including electrical circuitry having at least one
discrete electrical circuit, electrical circuitry having
at least one integrated circuit, electrical circuitry
having at least one application specific integrated
circuit, electrical circuitry forming a general purpose
computing device configured by a computer program,
electrical circuitry forming a memory device, and
electrical circuitry forming a communications device;

circuitry for accepting user input defining at least one
interaction between the labeled at least two buttons,
said circuitry selected from an electrical-circuitry
group including electrical circuitry having at least one
discrete electrical circuit, electrical circuitry having
at least one integrated circuit, electrical circuitry
having at least one application specific integrated
circuit, electrical circuitry forming a general purpose
computing device configured by a computer program,
electrical circuitry forming a memory device, and
electrical circuitry forming a communications device;

circuitry for accepting user input specifying at least one
constraint cost for the defined at least one interaction,

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38 said circuitry selected from an electrical-circuitry
39 group including electrical circuitry having at least one
40 discrete electrical circuit, electrical circuitry having
41 at least one integrated circuit, electrical circuitry
42 having at least one application specific integrated
43 circuit, electrical circuitry forming a general purpose
44 computing device configured by a computer program,
45 electrical circuitry forming a memory device, and
46 electrical circuitry forming a communications device; and
47 circuitry for assigning the labels of the at least two buttons
48 among the two or more buttons on one or more displayed
49 pages such that the at least one constraint cost is
50 substantially optimized, said circuitry selected from an
51 electrical-circuitry group including electrical circuitry
52 having at least one discrete electrical circuit,
53 electrical circuitry having at least one integrated
54 circuit, electrical circuitry having at least one
55 application specific integrated circuit, electrical
56 circuitry forming a general purpose computing device
57 configured by a computer program, electrical circuitry
58 forming a memory device, and electrical circuitry forming
59 a communications device.

1 11. The system of Claim 10, wherein said circuitry for
2 accepting user input specifying a geometrical arrangement of two or
3 more buttons on one or more displayed pages further comprises:
4 circuitry for accepting user input specifying one or more sizes
5 of the one or more displayed pages.

1 12. The system of Claim 10, wherein said circuitry for
2 accepting user input specifying a geometrical arrangement of two or
3 more buttons on one or more displayed pages further comprises:
4 circuitry for accepting user input specifying two or more
5 locations of the two or more buttons on the one or more
6 displayed pages.

1 13. The system of Claim 10, wherein said circuitry for
2 accepting user input labeling at least two of the two or more buttons
3 on the one or more displayed pages further comprises:

4 circuitry for accepting user input labeling at least two
5 buttons on a first displayed page presented to a user.

1 14. The system of Claim 10, wherein said circuitry for
2 accepting user input labeling at least two of the two or more buttons
3 on the one or more displayed pages further comprises:

4 circuitry for accepting user input labeling at least one button
5 on a first displayed page presented to a user; and
6 circuitry for accepting user input labeling at least one button
7 on a second displayed page presented to the user.

1 15. The system of Claim 10, wherein said circuitry for
2 accepting user input defining at least one interaction between the
3 labeled at least two buttons further comprises:

4 circuitry for accepting user input identifying at least one
5 relationship between the labeled at least two buttons,
6 said relationship selected from a relationship group
7 including a Fitts'-movement interaction, a Euclidean-
8 distance interaction, a City-Block-distance interaction,
9 an X-directed interaction, and a Y-directed interaction.

1 16. The system of Claim 10, wherein said circuitry for
2 accepting user input specifying at least one constraint cost for the
3 defined at least one interaction further comprises:

4 circuitry for accepting user input specifying at least one
5 constraint cost for the defined at least one interaction,
6 said at least one constraint cost selected from a
7 constraint-cost group including a global-difficulty
8 cost, a pages-to-close-buttons cost, a pages-to-fixed
9 buttons cost, a path-difficulty cost, a pages-to-far
10 buttons cost, and a parent-to-child variability cost.

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1 17. The system of Claim 10, wherein said circuitry for
2 accepting user input specifying at least one constraint cost for the
3 defined at least one interaction further comprises:

4 circuitry for accepting user input specifying at least one
5 weighting factor to be associated with the specified at
6 least one constraint cost.

1 18. The system of Claim 10, wherein said circuitry for
2 assigning the labels of the labeled at least two buttons among the
3 two or more buttons on one or more displayed pages such that the at
4 least one constraint cost is substantially optimized further
5 comprises:

6 circuitry for assigning at least one label of the labeled at
7 least two buttons among the two or more buttons on the
8 one or more displayed pages on the basis of an
9 optimization procedure selected from an optimization-
10 procedure group including a gradient descent substantial
11 optimization procedure and a simulated annealing
12 substantial optimization procedure.

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1 19. A system comprising:
2 means for accepting user input specifying a geometrical
3 arrangement of two or more buttons on one or more displayed pages;
4 means for accepting user input labeling at least two of
5 the two or more buttons on the one or more displayed pages;
6 means for accepting user input defining at least one
7 interaction between the labeled at least two buttons;
8 means for accepting user input specifying at least one
9 constraint cost for the defined at least one interaction; and
10 means for assigning the labels of the at least two
11 buttons among the two or more buttons on one or more displayed pages
12 such that the at least one constraint cost is substantially
13 optimized.

1 20. The system of Claim 19, wherein said means for accepting
2 user input specifying a geometrical arrangement of two or more
3 buttons on one or more displayed pages further comprises:
4 means for accepting user input specifying one or more
5 sizes of the one or more displayed pages.

1 21. The system of Claim 19, wherein said means for accepting
2 user input specifying a geometrical arrangement of two or more
3 buttons on one or more displayed pages further comprises:
4 means for accepting user input specifying two or more
5 locations of the two or more buttons on the one or more displayed
6 pages.

1 22. The system of Claim 19, wherein said means for accepting
2 user input labeling at least two of the two or more buttons on the
3 one or more displayed pages further comprises:
4 means for accepting user input labeling at least two
5 buttons on a first displayed page presented to a user.

1 26. The system of Claim 19, wherein said means for accepting
2 user input specifying at least one constraint cost for the defined at
3 least one interaction further comprises:

4 means for accepting user input specifying at least one
5 weighting factor to be associated with the specified at least one
6 constraint cost.

1 27. The system of Claim 19, wherein said means for assigning
2 the labels of the labeled at least two buttons among the two or more
3 buttons on one or more displayed pages such that the at least one
4 constraint cost is substantially optimized further comprises:

5 means for assigning at least one label of the labeled at
6 least two buttons among the two or more buttons on the one or more
7 displayed pages on the basis of an optimization procedure selected
8 from an optimization-procedure group including a gradient descent
9 substantial optimization procedure and a simulated annealing
10 substantial optimization procedure.
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